7/11/01

Jervis B. Webb Co. of California

- Introduction to Case: Gene Lucero of Latham
- Soil Closure Status: Gary Cronk of IT
  - Investigative History
  - Remedial Results
  - Proposed Workplan
- Groundwater Source: Mike Sklash of Dragun
  - Site Hydrology and Groundwater Flow
  - TCE Distribution in Soil Gas and Soil
  - TCE Distribution in Groundwater
  - TCE/PCE Ratio

Goals

- **Move Site quickly toward regulatory closure by approving and implementing Workplan**
- **NFA to Webb of California regarding groundwater at Site**

5030 Firestone Blvd., South Gate

Small industrial site in a heavily industrialized area

- 1.4 acre site in the City of South Gate
- Numerous industries surround the Site
- City has long history of industrial operations
- Site is vacant for several years

Investigation and Remediation History

- 18 subsurface investigations/reports completed since 1996
- Completed in a systematic manner with prior RWQCB approval
- 9 CPT borings
- 37 soil gas points
- 18 soil borings
- 9 PIPP groundwater samples
- 5 groundwater wells

(continued…)

- **Removal of clarifier and excavation of soil**
- **7 soil vapor extraction wells and construction/operation of a SVE System**
- **Quarterly groundwater sampling & reporting since 1998 and quarterly soil remediation progress reporting since March 2000**

Remedial Results

- 2-5 foot thick continuous clay layer at ~25 feet
- Operated a SVE for 16+ months (since March 2000)
- SVE has removed at least 155 pounds of VOCs from soil (88 percent removal efficiency)
- TCE vapor concentrations have decreased significantly
- Reached asymptotic levels
- Monitored for "rebound effect" (Sep and Dec 2000 & May 2001)

Effectiveness of SVE System

- 4 shallow wells screened above clay from 19-25 feet
- 3 deep wells screened below clay at 30-40 feet
- TCE levels decreased in shallow well SVE-1 from 10,000 ppmV to 11 ppmV
- TCE levels decreased in influent from 860 ppmV to 46 ppmV

Proposed Soil Confirmation Borings

- Three borings proposed:
  - CB-1 located 15 ft west of clarifier
  - CB-2 located 15 ft south of clarifier
  - CB-3 located 20 ft northeast of clarifier
- Borings to be extended to depth of 35-40 ft
- Soil samples collected at 5-ft increments and extracted by Encore sampler
- Analysis for VOCs by EPA 8260

Attenuation Factors

- Sample collected at 25 ft (clay) to be analyzed for geotechnical parameters:
  - silt-clay fraction (Hydrometer test)
  - bulk density
  - soil moisture
  - organic carbon
  - porosity
- Geotechnical data to be used in calculation of attenuation factors

Comprehensive Soil and Groundwater Investigation

The data indicate that TCE in groundwater originated upgradient and off-site

- Site hydrogeology
- Groundwater flow direction
- Distribution of TCE in soil gas and soil
- Distribution of TCE in groundwater
- TCE/PCE ratios

Site Hydrogeology

- Regional and nearby site investigations
- 18 soil borings, 5 monitoring wells, and 9 CPT
- 45 feet of unsaturated, unconsolidated, interbedded sandy, silty, and clayey soils
- Unconsolidated, interbedded sandy and silty soils to base of investigation at 73 fbgl
- 2-5 foot continuous, competent clay at ~25 fbgl

Groundwater Flow Direction

Firestone Boulevard is the upgradient property boundary

- All 32 monitoring events since 1998 indicate predominant flow direction is north to south
- Consistent with
  - Regional flow directions
  - Data from Mondo Chrome (located NW)
  - Data from Dial Corporation (Located S)
- Firestone Boulevard is the predominant upgradient property boundary

TCE in Soil Gas

Soil gas non-detects along upgradient property boundary

- 37 soil gas sampling locations
- ~60-foot spacing, testing at 2-5 fbgl
- Highest TCE centered near former clarifier
- Soil gas non-detect or low along northern property boundary

Distribution of TCE in Soil

Site soils cannot explain high TCE in groundwater

- 78 soil samples, 21 locations, to > 40 fbgl
- Low concentrations, only two samples

  > 10 mg/kg TCE (B4-20.5', B18-21')
- Site soils cannot explain high concentrations observed in groundwater (>25,000 ug/l)
- No TCE in soil on upgradient boundary (MW-2)

Distribution of TCE in Groundwater

TCE upgradient cannot be explained by Site soils

- 11 quarterly sampling events since 11/98
- Concentrations in groundwater and soil inconsistent wrt location and magnitude
  - –High TCE > 2000 ug/l on upgradient property boundary, none in soil there
  - –Very high TCE > 25,000 ug/l at CPT-6 and CPT-7, upgradient of clarifier
  - –TCE concentrations in groundwater much too high wrt observed on-site soil concentrations

TCE/PCE Ratios

TCE/PCE ratio indicates off-site source of groundwater TCE

- Ratio of TCE:PCE
  - –Soil gas.....2.5:1
  - –Soil.....1:1 to 2:1
  - –Groundwater.....150:1 to 300:1
- TCE and PCE in groundwater from off-site source

Soil: Water Table up to Clay Unit

TCE in soil just above water table originates from groundwater

- Trend from water table is upward decrease in soil TCE
  - Inconsistent with on-site source of TCE
  - Especially at B15 and B17
- TCE in soil between water table and clay unit originates from groundwater
  - Due to water table fluctuations and/or volatization from groundwater

Summary

Site hydrogeology is well-documented

- Comprehensive soil and groundwater investigation at Site
- Continuous, competent clay unit at ~25 fbgl
- Water table at ~45 fbgl
- Firestone Blvd is upgradient property boundary

Summary - continued

Indications of Off-site Source of TCE

- High TCE in groundwater along upgradient property boundary, not in soil
- High TCE in groundwater at CPT-6 and CPT-7, upgradient of clarifier, but not in soil
- TCE in groundwater much greater than in soil
- TCE/PCE ratio